20. Delicate and light *French* Minchet, toſted, may poſſibly be alſo good for our Sapps.

21. For the clearing of what was delivered *Num.* 43. p. 858. about *prickt Circles* in Trees, it may be added, That thoſe *Circles* are ſuppoſ'd to be at ſome time of the year of one ſingle row of *pricks*, and at ſome ſeaſon, of more, and at others, of ſolid wood. *Quere*, 1. What alteration is found in Circles of *Pricks*, or *Wood*, in Spring, at Midſummer, and in Autumn *&c*? 2. Whether theſe ſingle or double Circles of pricks and coats of Ielly or wood, increaſe betwixt the inner and outward bark, or not? Or, betwixt the one and both of the barks, *i. e.* on one or both ſides of the inner bark? I conceive, it doth on both ſides of the inner bark, ſo that in ſome thick outward *Barks* thoſe Circles may be obſerv'd, as in *Wood.* 3. Whether the Tree receives increaſe in all its inner coats, ſo as every coat yearly grows thicker, or in the outtermoſt only, or in ſome of the outward coats alſo?

Dr. Iohn Beals *Inſtances*

Promiſed in Numb. 42. *and intended to ſhew the Correſpondence of the* Pith *and* Timber, *with the* Seed *of the Plant; and that of the* Bark *or Sap in the bark, with the* Pulp *of the Fruit, or ſome encompaſſing* Coat, *or Cod, containing the Seed.*

The Author having prefaced, that he can promiſe no Method in the following Communications, gives theſe Inſtances.

Firſt, *ſaith he*, I had an excellent *Summer-Apple*, containing abundance of very pleaſing Iuyce. It was of that kind, which never grows large. The Body by the burthen of the fruit always wreath'd towards the ground; the Branches all curl'd, and full of knots at every turning; and theſe branches apt to grow, if a good knot be ſet in the ground, aſſoon as 'tis cut off, eſpecially about *Candel-maſſe.* This Tree was hollow, and very near all the Timber extremely rotten from the top of the Stem to the root; and every ſprigg, how ſmall however, appear'd Cork-color'd and rotten at the heart of the Timber. And ſo it was generally all over the Roots; and 'tis like, it had been ſo many years before: Yet the Tree bore abundantly

dantly with alternative reſts every ſecond or third year. The fruit had ſcarce any core; the kernels were very ſmall, thin and emptie; neverthele ſſe the branches from the knots grew well enough to repleniſh a Nurſery for me. This ſeems to indicate the Correſpondence between the Pithy part, Heart or Timber, and the Seeds. And more to confirme this; A young tree grew like a Sucker from the only ſound Root of the aforeſaid Apple-tree. This tree grew ſtraiter then others of the ſame kinde uſually do; of which I conceive the cauſe to be this: Suckers are commonly barren a pretty long time; and this continued barren, til the ſtem was ſtrong enough to bear the fruit which loaded the branches. But that, which makes to our purpoſe, is this; All the fruit of this young tree had ful and ſound Kernels; and though it was the ſame fruit, growing from the Root of the ſame tree; yet it ſeem'd not altogether ſo tender, delicious and juycy, as the fruit of the old tree; nor yet was the tree ſo fruitfull. The Sap in the old tree was leſs diverted, it ſeems, to ſuſtaine the life of the timber, which was now conſumed; and thereby was wholy appropriated for the leaf, bloſſom, and the pulp of the fruit. For I do not undertake, that the Sap yeilds no relief to ſuſtain the life and growth of the timber *ordinarily*, and whilſt the timber is entire; but I rather conceive, that there is a more immediate and peculiar relation between the Sap and Pulpous fruit, and the like between the Timber or whole ſtock, and the Root of the Tree, to tranſmit the ſame ſpirit and nature to the Seed of what kind ſoever it be.

Some are of opinion, that there paſſes into the Timber no part of meer Earth to ſuſtain the life and growth of the Plant, but it only feeds on the ſucculent part aſcending by the Roots, and on the Air, and the moiſture, which the Dews of Heaven, the Rainy ſeaſons, and the Air afford. And if we conſider, that ſome lofty trees grow upon the Rocks, where little or no earth can be found; as alſo, how largly the Oak and Pear-tree grows and ſpreads, and how many years the one bears Acorns, the other Pears, ſomtimes to the quantity of yeilding 5. or 6. hogsheads yearly (as I have known them do;) and in compariſon how little waſt of Earth about the roots appears; we may find more cauſe to attribute this large expence of materials to the perpetual

petual ſupply of Moiſture, than of much Earth. I will give you an experiment, which may ſeem to determine the point, though I yet ſuſpend my Judgment.

took the largeſt of *Kentiſh* Codlins, Pearmains, Pepins and Deuxans; I wither'd them (which may be ſoon done many ways;) and then I cut them in the midle quite through the midſt of the kernels, having carried them ſome dayes in my pocquet: all that ſaw them, took them to be very wood, and they were indeed like very cloſe Cork. And ſome Philoſophical perſons (though I affirm'd no falſhood, but concea'd the whole matter) did upon the view ſpread it abroad, that I had the *Art* of *converting* all *Fruit* into Wood; pulp and kernels and all was wood. The ſame may be done upon Pears, Cowcumbers, Turnips, and all the Grains and Vegetable Seeds, that are ſtuck in them, and are cheriſh'd by a ſupply of Marly Water. Thus I have had the blades of Wheat and the helme of Peaſe grow out of them to the length of a foot, and then by hanging it in a cloſet, all becoms turn'd into wood; and in ſome time after, all is turnd into Duſt and Earth. And as we are well taught by Maſter *Boyle*, that pure Liquids may be converted into Earth; ſo theſe Terreſtrial parts of the Fruit may be from the Liquors thither collected, and derived from the Maſs of the Earth.

But to return to the clearing of the affinities above claimed; I Inſtance in *Berbery* roots, perforated by me, which bore Berries, that had no ſtones at all: And in hollow'd Apple-trees the kernels will be very thin, and empty ſkins, and uncapable of growth. Gardeners tell me, that if you take the hard ſtick out of the root of Parſly, it will bear no kind ſeed. But it may be objected, that a very hollow *Oak* and an hollow *Elme* doe bear pregnant ſeed. I anſwer, that an *Elme* is all Timber to the Bark; and an *Oak*, when 'tis all putrid at the heart, yet may have firm wood enough to convey the Spirit of the root into the Acorn; and the Roots may be ſound, when the Body of the Tree is much decayed by rain, beating in at the lopp'd tops, or by other paſſages through the Bark. We ſee, that *Beans*, *Wheat*, and other Grain grow kindly, if the Eyes and parts next adjoyning be whole, though the *Beans* be full of great holes in other parts, or the main body of the *Wheat* be cut off with Sciſſers.

However, let the objection give us the more Caution, that, if we deſſein to a Fruit without Stones, the perforation may be the bolder and the more compleat.

And to proceed further, ſome Trees are leſſe fruitfull, or altogether barren by the exceſſive growth and firmneſs of the Timber; and theſe are recover'd by croſs deep hackings through the Bark: And ſuch injuries done to the Timber both in the Stem and main Roots, they cleave the Roots, and put a ſtone in the cleft, that it may not cloſe again too haſtily. If this violence be not done both to the Stem and Roots, the remedy may fail. We ſee alſo, that *Vines* are leſs fruitful, when they are permitted to run out into many woody branches.

II. To ſhew alſo the Proximity between the *Sap* of the *Bark* and the *Pulp* of the *Fruit*; I did in Summer-time make Reſts for water on the body of *Kentiſh* Codlin-trees, and cauſ'd water to be frequently powred into thoſe Cavities. The effect was this, the Apples grew to an extraordinary bigneſs, and were very inſipid, and many of them had parts in appearance much like the pulp of *Lemons*: ſome I ſuffered to hang on the Tree as long as they would, and thoſe became full of Spots of the Colour of Corke, or like the rotteneſs of an Apple.

I omit the reſt, and haſten to redouble a remark of the great uſe, which may be made of the cheif Experiment. The *Graft* carries the maſtery from the *Stock* for the *Pulp* of the fruit; So that we have little hope of much change by *meer* Graftings, how oft ſoever iterated. But if after many, and ſtrange, and choice Engraftings you ſet the Kernel, Stone, or Seed of the grafted Fruit in a Kind Mould, you may then expect ſome new or mingled kinde of Plant, as *Semi-Apricocks*, &c. And thus the *Almond* and *Peach* may by many changes in the Graftings, and by Inteneration of the Stones of the Peaches, and of the Shels of the Almonds, and by Terebrations of the Stem and Root here and there, alter their guiſes, ſo that the Coat of the Almond may approach to the Pulp of the Peach, and the kernel of a Peach be enlarged to a kinde of Almond; and great ſtore of better contrivances may from hence take riſe.